

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>CFU00012W0</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/JP 02/ 05952</b>	International filing date (day/month/year) <b>13/06/2002</b>	(Earliest) Priority Date (day/month/year) <b>27/06/2001</b>
Applicant <b>CANON KABUSHIKI KAISHA</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 07 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☒ Certain claims were found unsearchable (See Box I).

3. ☒ Unity of invention is lacking (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

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☐ None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/JP 02/05952

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 G02B1/00 G02B5/30

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Classification of document, with indication, where appropriate, of the relevant pages	Relevant to claim No.
X	US 5 867 315 A (KOIKE KATSUHIRO ET AL) 2 February 1999 (1999-02-02)  abstract; claims 1,5,10-12,21,24,27	1-4, 8-17, 24-43
A	US 4 215 288 A (KATO TAKEFUMI ET AL) 29 July 1980 (1980-07-29)  the whole document	1-4, 8-17, 24-43
A	PATENT ABSTRACTS OF JAPAN vol. 017, no. 305 (P-1554), 11 June 1993 (1993-06-11) & JP 05 027200 A (FUJITSU LTD), 5 February 1993 (1993-02-05) abstract	1-4, 8-17, 24-43

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☒ Further documents are listed in the continuation of box C

☒ Patent family members are listed in annex

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document relating to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

\*G\* document member of the same patent family

Date of the actual completion of the international search:

10 January 2003

Date of mailing of the international search report

23.01.03

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP 02/05952

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication where appropriate, of the relevant passages	Relevant to claim No
A	US 2 934 993 A (CHROMY BENJAMIN J) 3 May 1960 (1960-05-03)  the whole document	1-4, 8-17, 24-43
X	EP 0 942 297 A (NIPPON KOGAKU KK) 15 September 1999 (1999-09-15) abstract: claims 1,7,14,15; figure 3	5,6
A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 06, 22 September 2000 (2000-09-22) & JP 2000 086394 A (NATL SPACE DEVELOPMENT AGENCY OF JAPAN; FURUKAWA YOSHIZUMI; NISSAN MOTO), 28 March 2000 (2000-03-28) abstract	1-43
A	WO 01 02799 A (CAMBRIDGE RES & INSTRUMENTATIO) 11 January 2001 (2001-01-11) abstract; figure 1 page 11, line 15 - page 13, line 34 page 20, line 4 - line 8	18-23
A	US 5 042 922 A (PEPPER DAVID M) 27 August 1991 (1991-08-27) the whole document	18-23

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/JP 02/05952

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☒ Claims Nos.: 5, 6, 18-23  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically  
see FURTHER INFORMATION sheet PCT/ISA/210
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-4, 7-17, 24-43

Claims 1-4, 7-17 and 24-43 relate to an isometric crystal for which the angle between the '001' crystallographic axis and the optical axis of an optical system comprising said isometric crystal is given.

The underlying problem to be solved is how to orientate an isometric crystal within an optical system.

The special characteristic is the angle between a crystallographic axis ('001') of the isometric crystal and the optical axis of the optical system comprising that isometric crystal.

2. Claims: 5-6

Claims 5 and 6 relate to a method for growing an isometric crystal and getting a physical face of said isometric crystal parallel to a given crystallographic plane.

The underlying problem to be solved is how to obtain an isometric crystal having a face parallel to a crystalline plane.

The special characteristic is the parallelism between a physical face of the isometric crystal and a given crystallographic plane thereof.

3. Claims: 18-23

Claims 18-23 relate to an optical system comprising at least one element having intrinsic birefringence so that the wavefront deviation caused by the birefringence in the whole system is lower than  $\lambda/4$  ( $\lambda$  being the used wavelength).

The underlying problem to be solved is how to select the intrinsic birefringence of an optical element within an optical system to improve the image quality of said optical system.

The special feature is the intrinsic birefringence of at least one element within the optical system.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box 1.2

Claims Nos.: 5,6,18-23

The large number and phrasing of independent claims presently on file render difficult, if not impossible, to determine the matter for which protection is sought, the present application fails to comply with the clarity and conciseness requirements of Article 6 PCT (see also Rule 6.1(a) PCT) to such an extent that a meaningful search is impossible. Consequently, the search has been carried out for those parts of the application which do appear to be clear.

Present claims 1-4, 7-17 and 24-43 (first group) relate to an extremely large number of possible devices. For example in claim 3, which appears to be the broadest of this group:

- The structural relationship/arrangement between the "optical element", "isometric crystal" and "optical system" is not defined;
- It is also not clear how the optical axis is defined/measured;
- Furthermore, the identification of structural features appears impossible from the phrasing of the claim. The present phrasing of the claim does not enable the skilled person to determine the essential structural features that are necessary to carry out the invention.

Therefore, a meaningful search is impossible.

Furthermore in the other two groups of inventions:

- In claim 5, it is unclear how the optical element is formed. In addition, the phrasing "controlling growth so that" attempts to define the subject-matter of the claim in terms of a result to be achieved thereby fails to identify the actual method steps leading to that result. Also, <001> is actually a crystallographic axis, not a face/plane (see e.g. claim 3)
- In claim 18, it is unclear with respect to what the wavefront deviation is estimated. It is further impossible to figure out whether it is a limitation on the PTV or the RMS figure and how/where is said wavefront deviation measured.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP 02/05952

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5867315	A	02-02-1999	JP 9043401 A	14-02-1997
US 4215288	A	29-07-1980	NONE	
JP 05027200	A	05-02-1993	NONE	
US 2934993	A	03-05-1960	NONE	
EP 0942297	A	15-09-1999	JP 11326189 A	26-11-1999
			EP 1271185 A2	02-01-2003
			EP 0942297 A2	15-09-1999
			US 6201634 B1	13-03-2001
			US 2001024314 A1	27-09-2001
JP 2000086394	A	28-03-2000	NONE	
WO 0102799	A	11-01-2001	EP 1200796 A1	02-05-2002
			WO 0102799 A1	11-01-2001
			US 6421131 B1	16-07-2002
US 5042922	A	27-08-1991	NONE	